Contraception

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The contraceptive methods most commonly used in the U.S. are, in order of popularity, oral contraceptives (OCs), condoms and spermicides, withdrawal, diaphragms, rhythm, implants, and intrauterine devices (IUDs). Also a 3-month progestin injection was recently approved for use in the U S. Over a period of several years, pregnancy rates were <1% a year for oral contraceptives, IUDs, implants, and the progestin injection, and about 5% a year for the other methods.

Oral contraceptives.—Effectiveness does not differ significantly among the various combination OCs; if no tablets are omitted, the pregnancy rate is <0.2% at the end of 1 year. Low-dose estrogen pills have fewer side effects than the older high dose formulations and should be used by nearly all women. Only those who are taking some other medications, particularly drugs for epilepsy, should use the higher estrogen dose pills. The newer lower dose OCs have very few health risks and many health benefits unrelated to contraception.

Healthy women who do not smoke can take low-dose OCs continuously until menopause. *However, in women over age 35 who smoke cigarettes or have other risk factors for heart attack (eg, untreated hypertension or vascular disease) and use OCs, an increased risk of death has been reported from stroke and heart attack.* No such risk has been reported with low dose pills, but it is still safer for women over 35 not to use them if they smoke or have other vascular disease. The risk of stroke was previously estimated to be greater in OC users, but recent studies in which pills with lower doses of estrogen were used have shown the incidence to be no different in healthy OC users than in healthy nonusers of similar age.

The risk of breast cancer is not increased in OC users overall or in high risk subgroups such as those with a family history of breast cancer or cystic changes in the breast. After 35 years of OC use in humans, vast amounts of information have been amassed regarding the cancer effects of OCs. Although some studies show an increased risk of breast cancer in certain groups of OC users, mainly young women under 35, most studies do not confirm such an association and actually show a decreased risk of breast cancer association with OC use in women 45 to 55 when the disease is more common. Several other studies show that cervical cancer is increased in OC users, particularly those who have used OCs for >5 years. A causal relationship has not been established, but such women need to have Pap tests performed at least annually. A number of studies have shown that OC use decreases the risk of the lethal uterine and ovarian cancers by about 50%, and this reduced risk persists after OC use is stopped. Other documented noncontraceptive health benefits of OC use include a decreased incidence of abnormal bleeding, dysmenorrhea, premenstrual tension, anemia, cystic breast disease, and functional ovarian cysts. A reduced incidence of tubal pregnancy and tubal infection associated with OC use should decrease infertility. OC users also have fewer cases of rheumatoid arthritis and osteoporosis than nonusers.

Implants.—Plastic capsules containing levonorgestrol are inserted under the skin in the upper arm; when released, the drug inhibits ovulation and prevents sperm from penetrating the thick cervical mucus. A small incision is made under local anesthesia in the office or clinic. Then 6 capsules are inserted through a needle in a fanshaped pattern to obtain sufficiently high blood levels of the hormone for effective contraception. The incision is closed without sutures. The capsules remain in place and are effective for 5 years. The major side effects are irregular uterine bleeding and no bleeding. Headache and weight gain also could prompt premature removal of the capsules. With proper counseling, many women choose to continue using this method of contraception after 5 years, but because the capsules are not dissolved in the body, they need to be removed and replaced. Removal is similar to insertion but more difficult because scarring develops around the capsules. Normal ovarian activity and return of fertility resume immediately after removal.

Injections.—Depo-medroxyprogesterone acetate (DMPA), a long-acting injectable progestin, is given as a injection once every 3 months in the muscle of the buttock or upper arm. The major side effect of DMPA is complete disruption of the menstrual cycle. As duration of therapy increases, the incidence of frequent bleeding steadily declines and the incidence of no bleeding steadily increases, so that at the end of 2 years about 70% of the women treated with DMPA have no menstrual bleeding.

Additional side effects include slight weight gain and, because of the long duration of action of the drug, there is a delay in the return of fertility for as long as one year, but it does not cause sterility. Use of DMPA does not increase the risk of developing any cancer, including breast cancer, and the risk of uterine cancer is greatly decreased. DMPA may cause temporary osteoporosis which disappears after the injections are stopped.

Intrauterine device (IUD).—In contrast to other contraceptives, only about 1 million women in the U.S. use IUDs for contraception, even though they are very effective. IUDs have some advantages over OCs: Their effects are limited to the female genital tract, and insertion requires only one decision by

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the patient. Only 2 types of IUDs currently are marketed in the U.S.; the progesterone-releasing IUD needs to be inserted annually, the copper-bearing T380A is effective for at least 10 years. Pregnancy rates at the end of 10 years of use with this device are <2%.

The IUD does not act by causing an abortion each month. It acts mainly by killing sperm and preventing fertilization of the egg. An inflammatory reaction in the cavity of the uterus is generally accepted as the main cause of the contraceptive effect. Bacteria are present in the uterus for 24 hours after insertion of an IUD, and although the cavity rapidly becomes sterile, inflammation persists after the bacterial infection disappears. The inflammatory reaction ceases when the IUD is removed and fertility returns promptly. Bleeding and pain are the major medical reasons for removing an IUD; these problems account for >50% of all discontinuances and occur in about 15% of patients during the first year of use and 7% during the second year of use. The expulsion rate for most devices is greatest during the first year (about 10%) and occurs most frequently in the first few months after insertion. *About 20% of expulsions are unnoticed and can be followed by an unintended pregnancy;* therefore, a plastic string is attached to the IUD so the user can check periodically, especially after menses, to see that the device has not been expelled.

Perforation of the uterus is a potentially serious but uncommon problem; for devices in current use it occurs in about 1/1000 insertions. Perforation always occurs during insertion. Perforation should always be suspected if the patient cannot feel the string but did not notice that the device was expelled. All IUDs in the abdominal cavity should be removed, as they can cause bowel scarring.

Infection of the endometrial cavity occurs at the time of IUD insertion and clears after 24 hours. IUD tail strings do not provide continuous access for bacteria to enter the uterus. Pelvic infections occurring after an IUD has been in place for ≥30 days are sexually transmitted and are not caused by the IUD; they can be treated without removing it, unless the infection is severe or the patient is pregnant. Routine antibiotic use during insertion is not cost-effective. An IUD should not be inserted if there is clinical evidence of cervical infection. Individuals at high risk for developing PID including those with a prior history of PID, and women with multiple sexual partners should use condoms or a diaphragm together with an IUD.

Pregnancies overall are effectively prevented with IUDs; however, a woman who becomes pregnant with an IUD in place has about a ten-fold greater than normal (or 3% to 9%) chance of having a tubal pregnancy. If a woman who becomes pregnant with an IUD in place wishes to continue the pregnancy and the tail string is visible, the IUD should be removed, since the spontaneous abortion rate is lower after removal of the device. Several long-term studies have shown no evidence that IUDs increase the risk of cervical or uterine cancer.